

# ZOOGER



# Friends of the National



is a nonprofit organization of individuals and families who are interested in supporting Zoo programs in education, research, and conservation.

As members of FONZ, you and your family receive many benefits—publications, discount privileges, free parking, and invitations to special programs and activities—to make your zoo-going more enjoyable and educational.

*ZooGoer* is published bimonthly by the Friends of the National Zoo, c/o The National Zoological Park, Washington, D.C. 20008. Third class mailing permit 44282. Subscription as percentage of full membership dues is \$4 a year. Subscription-only membership is \$5 a year (extra cost covers processing, handling, and related expenses) and is available only to institutions or those residing outside of the Washington, D.C., metropolitan area.

© 1980, Friends of the National Zoo. All rights reserved.

ISSN: 0613-416X

## **FONZ Board of Directors, 1979-1980**

Whayne S. Quin, *President*; John S. Brown, *First Vice President*; Cecil McLelland, *Second Vice President*; Robert L. Nelson, *Treasurer*; Sally S. Tongren, *Secretary*; Samuel Biddle; Janice A. Booker; William C. Bryant; Victor Delano; M. Anthony Gould; Al Hackl; Meldon S. Hollis, Jr.; Stephen T. Hosmer; Julie P. Hubbard; A. José Jones; Nella Manes; Sheila D. Minor; Roscoe M. Moore, Jr.; Monica J. Morgan; Sylvia L. Samenow; Ross B. Simons; Julia V. Taft.

## **FONZ Staff**

Sabin Robbins, *Executive Director*; Dennis Baker, *Associate Director*; Donna Schlegel, *Volunteer and Educational Services*; Mary W. Matthews, *Publications*; Fran Bernstein, *Membership*; Lonnie Wornom, *Merchandising*; Kevin Polen, *Transportation*.

## **Zoo Staff**

Dr. Theodore H. Reed, *Director*; Dr. John Eisenberg, *Assistant Director for Animal Programs*; Mr. Gaetano Calise, *Assistant Director for Support Services*; Dr. Robert Hoage, *Special Assistant to the Director*; Mr. Jaren Horsley, *Executive Assistant, Office of Animal Programs*.

## **Department Heads**

Dr. John Eisenberg, *Acting, Mammalogy*; Dr. Eugene Morton, *Acting, Ornithology*; Dr. Dale Marcellini, *Herpetology*; Ms. Judy White, *Education*; Dr. Mitchell Bush, *Animal Health*; Dr. Richard Montali, *Pathology*; Dr. Devra Kleiman, *Zoological Research*; Dr. Christen Wemmer, *Front Royal Conservation Center*; Mr. Donald Muddiman, *Construction Management*; Mr. Emmanuel Petrella, *Facilities Management*; Mr. Robert Mulcahy, *Graphics and Exhibits*; Mr. Samuel Middleton, *Police and Safety*.

# ZOOGER

## Features

### Common Mistakes About Snakes

by Bela Demeter



**Volume 9, Number 4  
July-August, 1980**

Mary W. Matthews,  
Editor

Mary C. Massey,  
Consulting Editor

Rebecca McClimans,  
Design and Production

*FRONT COVER: Seal, bear, cat, porcupine, kangaroo—the binturong, or “bear cat” (a relative of the civet), reminds every zoo visitor of a different animal.*

*BACK COVER: FONZ ZooNight 1980 delighted members with a brand-new “panda.” Despite rain the first night, record crowds enjoyed both ZooNights.*

### The Illegal Wildlife Trade

by David Mack



### Binturong on My Back

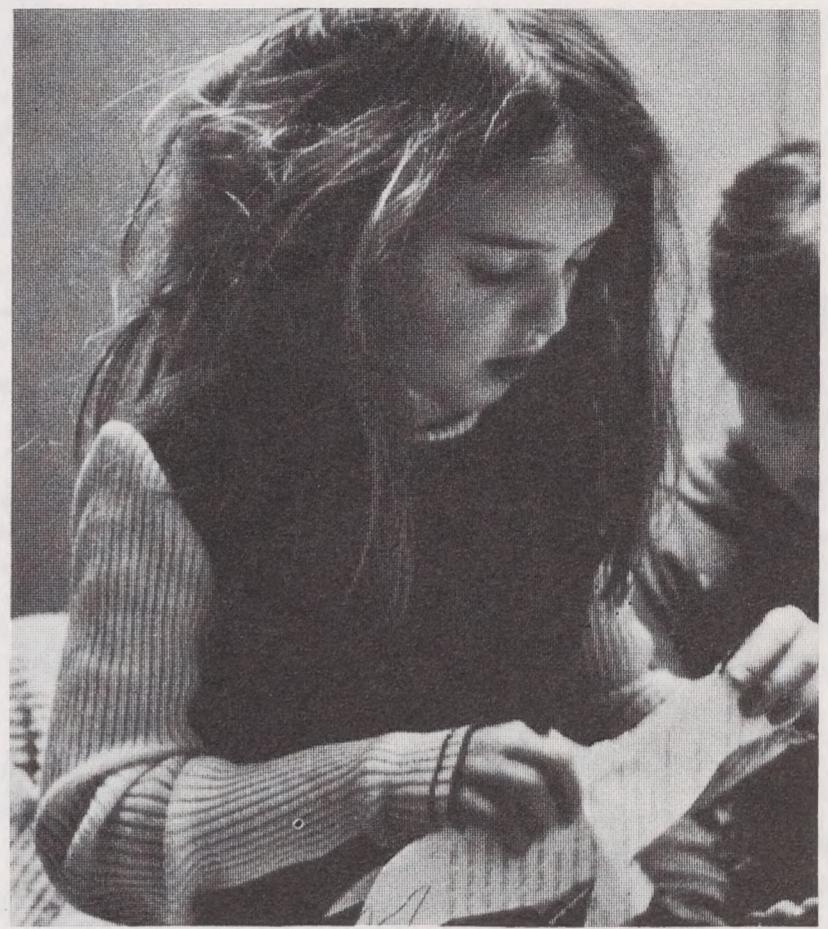
by Frank Kohn



## Departments

### ZooNews

18



### FONZ News

20

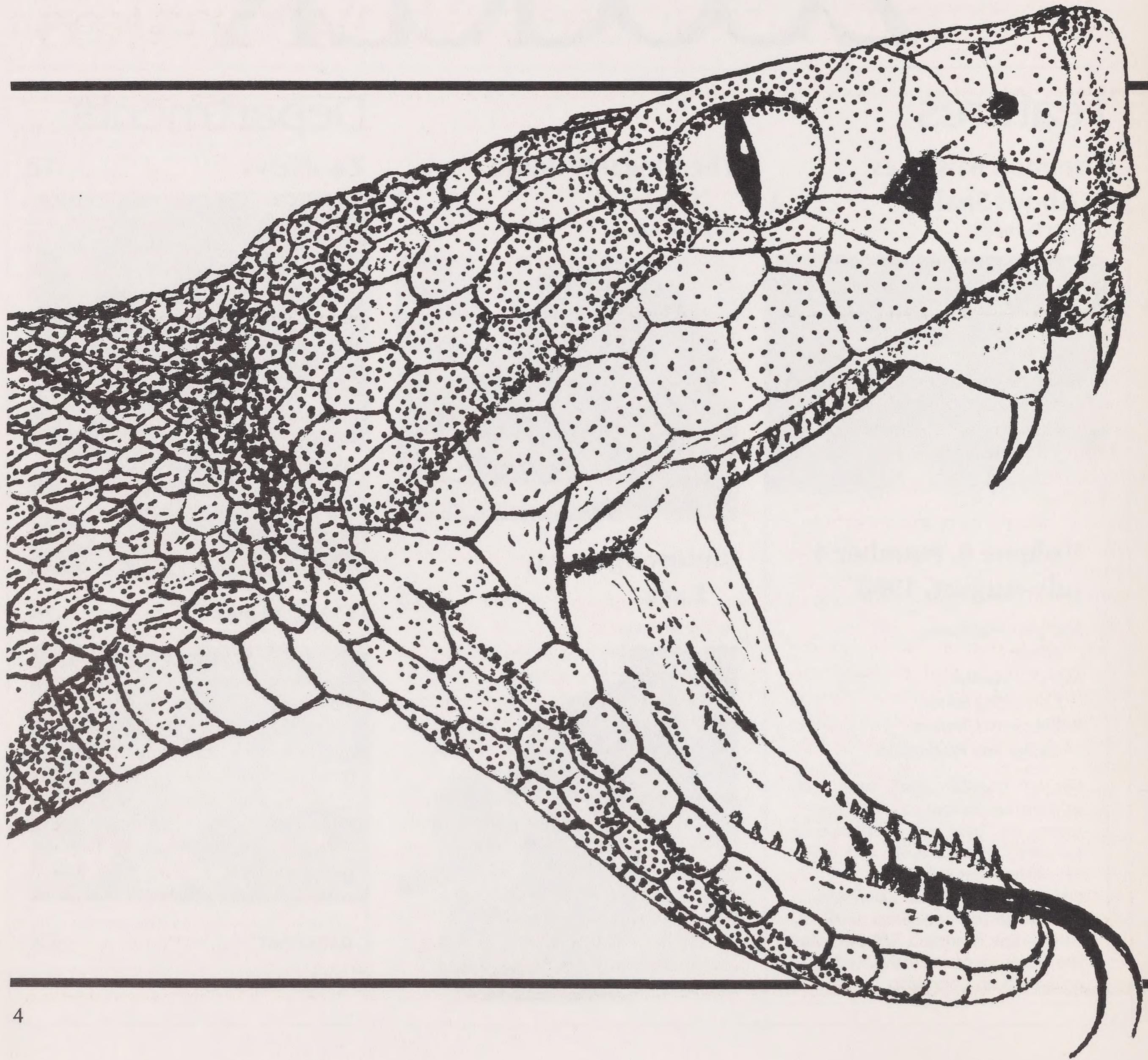


### Calendar

22

### Contributors

23



# Common Mistakes About Snakes

BY BELA DEMETER

In warm weather, a Washingtonian's worries turn not only to poison ivy, crabgrass, etc., but also to... snakes?

It's true! When hot days arrive, snakes come out of their dens—and the National Zoo's Reptile Division is deluged with calls, all the way from "There's a python in my oak tree!" to "Where can I buy snake repellent?"

Folklore is full of tales about snakes. Many of them may have started with some basis in fact—but with embellishment, seasoned over time, most have totally lost touch with reality.

Typical questions we get at the Zoo deal with the real fears and misconceptions people have concerning the snakes that live in our area. After reading this article, you'll know that most of these fears are either unfounded or exaggerated.

Remember that this article deals with the snakes of Washington, D.C.,

*Elliptical pupils, deep facial pits, and fangs distinguish the copperhead, Washington's only venomous snake. The drawing is by NZP keeper Bob Walsh.*

and thus much of it, particularly the details on distribution and identification, may not be true for other parts of the country.

---

*Fiction: The copperhead is the most prevalent snake in the Washington area.*

---

**Fact:**

Within fifty miles or so, there are about 20 species of snakes native to the Washington area. Some are burrowing, some arboreal, and most are solitary—all of which makes it difficult to determine density and population.

The best estimate of which snakes are most common comes by counting and classifying both the snakes people have brought to us over the years and those we've been able to identify over the telephone.

With this in mind, it's safe to say that the most common Washington snake is the black rat snake. Most of our "copperhead calls" come because the skins of young black rat snakes have a blotched pattern that makes it easy for people to mistake them for copperheads.

After the black rat snake come, in order of frequency, the garter snake, the northern water snake, the ring-neck snake, and the DeKay's snake.

None are poisonous or even particularly dangerous.

A word on identifying snakes over the phone: Though all reptile keepers have more than a passing familiarity with snakes, that really doesn't qualify us to identify a snake sight unseen. For one thing, most of the people who call us are not trained observers, and they are rather nervous. If they tell us it's a six-foot anaconda, it's probably a two-foot ringneck!

Also, some snakes' skin patterns can be difficult to describe even if one is trained, because of their irregularity. Most people don't know the difference between a stripe and a band, a blotch and a rhomb, a fang and a tooth, a pit and a nostril. It makes communication very difficult. When someone describes a snake to us as "a foot long, slimy, with zig-zag lines all down its sides," it doesn't help much.

Another problem is that the snake may not even be from this area! There are many amateur herpetologists in Washington, and snakes sometimes escape. The possibility is remote, of course—so look twice when you think you see a nine-foot-long boa constrictor. It may be someone's scarf, or it may be one of any number of smaller, harmless local snakes.

---

*Fiction: Cottonmouth water moccasins live in the Potomac River.*

---

**Fact:**

The cottonmouth, or water moccasin, is a venomous pit viper from the southeastern United States. It is called the cottonmouth because when it is disturbed it gapes, revealing a mouthful of puffy white flesh.

The word "moccasin," though frequently misused, is reserved for the two venomous pit vipers found only in the eastern half of the U.S., the copperhead and the cottonmouth. The copperhead, found in high, dry places, is called the highland moccasin; the cottonmouth, which prefers swamps, is called the water moccasin.

Although many people know that the copperhead is the only venomous snake in Washington, we frequently have callers who insist that they have spotted or killed a cottonmouth near the Potomac River.

One problem is terminology. Although the word "moccasin" is reserved for the cottonmouth and the copperhead, many people believe that if it's near a body of water, it must be a water moccasin. In fact, it's probably a northern water snake.

Another problem is that cottonmouths and water snakes look alike, and it's difficult to tell them apart in the field. Both are semiaquatic, and both occupy similar habitats.

But the differences and similarities are purely academic for us, since the Dismal Swamp in southeastern Virginia is as far north as the cottonmouth ever gets.

The northern water snake, by the

way, is one snake you probably won't want for a pet—it has an unfriendly tendency to bite. Repeatedly. (This may have something to do with its unpopularity.) A bite from this snake, however, is harmless, and needs no more treatment than washing followed by a mild antiseptic.

---

*Fiction: The diamond-shaped head is a sure way to identify a venomous snake.*

---

**Fact:**

I hate to burst the weekend naturalist's dream-bubble—but the shape of a snake's head is the worst way to identify a venomous snake.

Both water snakes and hognose snakes, for example, have a habit of flattening their heads when they're irritated, and this can easily be described as diamond-shaped or triangular. Both snakes, though, are quite harmless.

The hognose snake, by the way, is notorious because of its extraordinary behavior when threatened. First, it raises its head off the ground and does a great imitation of a cobra. It may even strike repeatedly, as if to bite—but it never even opens its mouth! If all this doesn't scare off the enemy, the hognose will go into a convulsion and flop onto its back, apparently dead. But the hognose makes one mistake when it "plays possum." If you roll it onto its stomach, it will immediately flop back over—to prove it's *really* dead!

To identify a venomous snake, it's best to rely on characteristics it won't have in common with other, harmless snakes. In our area that's easy, since the copperhead is our only venomous snake.

The copperhead's eye has a vertically elliptical pupil, much like a cat's. This gives the nocturnal copperhead better night sight. All other area snakes have round pupils.

The copperhead, the cottonmouth, and the rattler are all pit vipers—so called because each has two deep facial pits a little below the midway point between eye and nostril. The pit is a heat-sensing organ, used to help the viper find warm-blooded prey at night. Any snake that has a pit is venomous. The copperhead is the only Washington snake that does.

A third, seemingly obvious, way to tell if a snake is a viper is by the fangs. Unfortunately, most people mistake fangs for ordinary teeth. The fang is actually much larger than a tooth, and folds back into the upper mouth when not in use.

While these three features are unmistakable, they aren't too useful for recognizing a copperhead at a distance. Luckily, the copperhead has a few other identifying traits. It is a small snake, usually only two to three feet long. Its head is a coppery red (hence the name), and its skin has dark chestnut crossbands that form an hour-glass pattern when seen from above. At birth, young copperheads have a bright yellow tail tip. The heads of both young and adults are distinctly wider at the neck than at the front.

Of course, these descriptions may mean different things to different people. If you encounter a snake in the wild and you're not sure what it is, you should leave it alone.

This is a good time to mention that the copperhead's reputation is undeservedly bad. It is normally a



Reptile Keeper Trooper Walsh shows FONZ members a snake they're not likely to meet in their back yards—a python. Through such programs as this, FONZ helps teach facts about snakes.

quiet, inconspicuous snake—almost lethargic. When disturbed, it will run away if given half a chance. It is likely to bite only if it is startled, stepped on, or cornered.

And if a copperhead does bite you, the bite is not likely to be very dangerous. About one in four of all venomous snake bites are dry, meaning that almost no venom is injected. Another one in four of the bites inject minimal amounts—painful, but not

serious. The mortality rate from venomous snake bites in the entire U.S. is less than one in 200! Finally, when all the venomous snakes in the world are taken into consideration, the copperhead has one of the least potent venoms.

In other words—even if a copperhead were to bite you, which is extremely unlikely, chances are you won't even need special treatment at a hospital.

---

*Fiction: Some kind of snake repellent exists that will keep snakes out of your house.*

---

**Fact:**

There is no such repellent. Consider some of the methods of killing vermin, and you will see why.

Rodents can be killed by traps or poisoned grain. Snakes are the

original escape artists—so traps are meaningless. A poison *might* work; but how would you get the snake to eat it? Snakes are carnivorous, and usually eat only live prey.

Various sprays, powders, and poisons can be effective against insects, because they either inhale the poison or ingest it some other way. None of these substances will work against snakes. In fact, their scaly skin is much more impervious than ours is. Any substance you might leave around that would be strong enough to deter a snake would make your house uninhabitable.

This doesn't mean that if your house has been invaded by snakes, your only choice is to sell it and move. First, remember that the chance of danger to you is minimal—as I said earlier, 95 percent or more of all snakes in our area are completely harmless.

Most of the dangers you might run into have their roots in the psyche. If a snake crawls up your bathtub drain while you're showering, you may, startled, hurt yourself trying to escape.

The snake, meanwhile, is just as afraid as you are and is retreating just as rapidly, and usually with more finesse.

Snakes don't like a lot of commotion, so if they do invade your house, they'll usually live in the attic, the basement, or between the walls.

Why come inside at all? It may be that the snake wintered over in the attic because it was warm. The house could mean food to the snake—mice or rats. If you have a rodent problem, solving it may eliminate the snakes as well.

If you do have rodents, you're

actually lucky to have a snake around, since snakes do much less damage to property than rats and mice do. And they do a lot more damage to rats and mice than you do!

If you've cleaned out your wood-piles and trash bins (good rodent breeding grounds); are keeping your grass and plants trimmed (ditto, plus good hiding places); have gotten a cat (born hunters of both rodents and snakes)—well, resign yourself by remembering that your snaky co-tenant is so reclusive you probably won't see it more than twice a year.

---

*Fiction: Black snakes and copperheads are crossbreeding to produce a larger, more venomous hybrid.*

---

**Fact:**

We hear some variation on this story every year. To most people, all snakes look alike—so it follows that someday they'll start to crossbreed and end up taking over the world.

Black rat snakes and copperheads have been known to hibernate together, it's true. They've even been known to bask on the same ledge in warm weather. But it's genetically impossible for a copperhead to breed with any other snake in the Washington area.

Most snakes in our area are of the family Colubridae (Latin for "snakes"). Copperheads belong to the family Crotalidae (Latin for "rattlers.") The timber rattlesnake was the first snake discovered and named in its genus, and its Latin name reflects this—*Crotalus horridus hor-*

*ridus!*). It is impossible to cross-breed animals from different taxonomic families, however similar they look. You can't crossbreed black snakes and copperheads any more than you can crossbreed dogs and cats—or humans and gorillas.

---

*Fiction: Exotic snakes make better pets than local snakes.*

---

**Fact:**

By this time, snakes may be sounding so good you'd like one for a pet.

If your idea of a good pet is a boa constrictor to impress your neighbors with, then a local snake won't do. There are, however, several reasons why the Zoo recommends native snakes over imports, especially for the novice.

Snakes from another locale aren't as well acclimated as native ones, and are much likelier to present problems. The temperature, humidity, and photoperiod (length of the snake's "day") must be carefully monitored to approximate those of the snake's native habitat. Exotic snakes are also more prone to parasitic infestations, particularly if they're kept with other species.

Another problem with exotic snakes—especially boas and pythons—is that they tend to outgrow both cage and keeper. The few that don't die right away may reach 12 feet, 15 feet, or more.

That's usually more than the owner bargained for—and the first thing that comes to mind is donating the snake to the Zoo. Unfortunately, every animal the Zoo keeps fits into the Zoo's master plan, which takes into consideration such programs as



*The copperhead's skin glistens like a copper penny. Also known as the highland moccasin, this snake is likely to be more afraid of you than you are of it.*

exhibitry, research, and breeding. Any animal in excess of these programs takes up valuable space, time, materials, and food. Moreover, most of the animals offered to us are offered without proper documentation. All these reasons are why it is either unwise or, in the last case, illegal for us to accept donations.

So not only are exotic snakes more difficult to care for, but they are more difficult to dispose of

humanely if caring for them gets too difficult. The advantages of owning one of Washington's native snakes become clear: It's already acclimated, so the owner doesn't need to set up elaborate facilities for temperature, light, and humidity; it is less prone to infection and infestation; and if caring for it becomes too much, it can (providing that it's not wintertime or a heavily populated area) be released to the wild.

Reptiles have an amazing capacity for fending for themselves, regardless of how long they've been in captivity. So if you do let a snake go, you needn't worry that it might have "unlearned" the appropriate feeding behaviors and defense mechanisms.

A word of warning—don't put the snake into a neighbor's house with the idea of helping the neighbor with his or her rodent problem, unless you have permission first! □



# The Illegal Wildlife Trade

BY DAVID MACK

In March 1979, a Spring Valley, California, resident was arrested for trying to smuggle two military macaws, an exotic bird species, into the U.S. from Mexico. He had crossed the bridge from Tijuana, on foot, carrying two large flower vases. Inspectors found the two macaws wrapped in socks, with beaks and wings taped shut and the bodies strapped with masking tape. The Californian was fined \$1,000 and given a one-year suspended sentence and three years' probation.

It is illegal to export birds from Mexico without a Mexican permit. The U.S. estimates that 25,000 to 50,000 parrots are smuggled in each year, hidden in car doors, suitcases, and other containers. Why? Well, military macaws, for example, can be bought in Mexico for \$40 and sold in Los Angeles for \$1,000.

Illegal trade in certain reptiles brings similar profits. One illegal importer sold ten endangered radiated tortoises and other rare reptiles and amphibians to zoos for

---

*U.S. officials confiscate a horrifying amount of illegal wildlife products each year. These items include elephants' feet and skins, crocodile skins, and ivory. Left, a U.S. customs agent inspects confiscated polar bear skins.*

Steve Hillibrand, U.S. Fish & Wildlife Service



\$10,000. The dealer was sentenced to 14 months in jail.

Skins and furs of various animals are also illegally smuggled into the U.S. In 1973 a New York furrier bought 2,723 otter, 2,984 ocelot, 419 jaguar, 78 puma, 5,975 margay, and three giant otter skins, all obtained illegally from Colombia and Brazil. The total value of the pelts was estimated at \$5 million.

Not all wildlife and wildlife pro-

ducts are smuggled in. In fact, the legal wildlife trade is a billion-dollar business! In 1978 alone, the U.S. imported 368,000 live birds, 2½ million live reptiles and amphibians, 152,000 game trophies, 260 million tropical fish, over 13.1 million wild animal hides and skins, and 187 million products manufactured from wild animals. The pet trade flourishes from the sale of exotic birds, tropical fish, and various types of reptiles,

snakes, and amphibians. The fur business is thriving, and coats are continually being designed from different types of wild animal fur.

Thousands of crocodilian and reptile skins are used to make exotic-looking briefcases, purses, and other articles.

Although habitat destruction is still the major threat to most wildlife, commercial trade is decimating certain species. Tigers, cheetahs, leopards, and jaguars, once abundant throughout their range, are now in serious decline because of the demand from the coat and fashion industry. Since these species are now rare and protected, and impossible to harvest or farm economically, smaller and less desired spotted cats are being taken in enormous numbers for the "fun fur" market. Ocelots and margays from Latin America are removed by the thousands each year. Some 100,000 bobcats were killed in 1978 in the U.S. for export to European markets.

The decline in population of a more desired species leads to the use of a less desired species. The prized Orinoco and Nile crocodile skins are no longer used in the leather trade, because of these species' declining numbers—so less desired and smaller species, such as pythons or monitor lizards, are killed instead.

More than 280 mammal species, 200 bird species, and 60 reptile species are now considered endangered by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Today there are 59 countries that are members of CITES, but several have had difficulties in enforcing certain CITES regulations. For example,

it is impossible for Indonesia, with its thousands of islands, to monitor the "take" of such endangered animals as sea turtles.

Also, countries with large forested areas cannot control what is being removed. In several situations, species are smuggled out of a country that protects the animals and "laundered" into a country that will allow export. For example, Brazil is a party to CITES, and even has a national law more stringent than CITES's which prohibits the export of any wildlife. However, much of the wildlife in Brazil's Amazon jungle is captured and taken across the border to Paraguay or Bolivia, where it is exported freely. It is impossible for Brazil to effectively monitor its thousands of miles of border.

The United States' Lacey Act states that any wildlife entering the U.S. from a country that has a specific wildlife export ban will be confiscated and the importer fined and/or jailed. Unfortunately, the U.S. is hampered by not knowing many foreign wildlife export laws. Port personnel are largely unaware of what wildlife entering the U.S. can be confiscated under this Act.

Often, wildlife is brought into the U.S. through the use of false documents. The chance that a wildlife inspector can recognize a specific animal or plant is small, so the import document can just as easily give the name of a common species rather than the actual endangered one.

Our law enforcement and Customs officials are trying to deal with the illegal wildlife trade problems, but they get little support. Most ports of entry are understaffed. The port of Miami has only

two inspectors and three special agents to handle all wildlife entering the port, 24 hours a day, seven days a week. Several South American shipments enter this port at night, when no inspectors are on duty, and the wildlife shipments are often cleared without inspection.

The total number of wildlife shipments into the U.S. in 1978 was 200,000, and 10,000 of these contained endangered or threatened species. The import value of all wildlife totaled \$30 million, which means that the retail value was well over one billion dollars.

The movement to prevent the illegal wildlife trade is under way. The President's Message on the Environment in August 1979 addressed the subject of the illegal wildlife trade. At that time, Carter ordered the creation of several interagency task forces to study the problems surrounding the trade. Carter also ordered the creation of a wildlife section in the Justice Department to handle illegal wildlife cases.

In many ways, the illegal wildlife trade can be compared to the illegal drug trade. Highly sophisticated smuggling rings have been designed to bring the merchandise into the U.S.; the profits are immense; and the chances of getting caught are slim.

There is one major difference between the two trades: Illegal drugs do physical harm only to those who buy them and to the victims of drug-related crimes. The removal of wildlife from its native habitat causes irreversible damage to several species of wild animals and plants, as well as to the ecosystems of which they are part. □

# Binturong On My Back

BY FRANK KOHN

There is an animal most zoo-goers have never heard of—and even after seeing one, most people can't remember its name! It has been described as looking like a seal, a bear, a porcupine, even a kangaroo. It's the perfect zoo animal, really, since it seems like a mixture of many familiar animals.

The animal is the binturong, a palm civet from southeast Asia. It is related to other civets, genets, and mongooses of the carnivore family *Viverridae* (Latin for "ferrets").

Binturongs are the largest of the civets, measuring four to six feet long and weighing 30 to 60 pounds. They live high in the trees of the dense forests from Nepal to Sumatra, a very great variation in latitude.

Binturongs have shaggy black coats of long, coarse hair. Their grizzled hair tips may be gray, brown, white, or totally black. Binturongs are the only old world carnivore to have a prehensile tail. The tail comprises half of the binturong's total weight, and is used as a fifth foot, for support, when the binturong is in the trees (frequently).

Although they eat fruits almost

Frank Kohn



*Binturong babies are born blind and helpless. After two weeks their eyes are open, and soon they can eat their parents' diet of fruits and carrion. Here, mother Boe and daughter Arroe share a quiet moment.*

exclusively (they've been nicknamed "banana bear"), binturongs have well-developed canine teeth useful for capturing small vertebrates.

Little field work has been done on binturongs, but they are believed to be solitary, with males and females coming together only to breed. The female then apparently raises the young alone. Results of studies at the Buffalo Zoo, though, suggest that males may in fact take part in rearing the young by "babysitting" the playful cubs. Gestation is about 90 days, with litters averaging two to three cubs.

When females come into heat, they emit a soft, throaty vocalization called "geckering," which resembles purring. Geckering increases in volume and frequency as copulation bouts multiply. Occasionally a female may mate with several males—who become worn out from her continual solicitations.

In captivity, males fight seriously when together, and females may also fight females. In the wild it is believed that males inhabit a range that overlaps several smaller female ranges, but only borders the ranges of other males.

Civets are probably best known as the source of civetone, an expensive ingredient in perfumes. Civets possess a perineal, or perfume, gland at the rear of their brown secretion over a period of time. Years ago, civets were kept in laboratories, and three to four grams of civetone would be collected weekly and used in perfumes. Today, chemical synthesis

has made such collection procedures obsolete for all but the most expensive tastes.

It was the presence of this gland and secretion in binturongs and their use of it in marking branches within their environment, that brought me into close association with several curious and individual binturongs at the National Zoo's Conservation and Research Center in Front Royal, Virginia.

I originally came to the Conservation and Research Center as a volunteer keeper. But soon, thanks to the help of Dr. Christen Wemmer, head of the CRC, I received a FONZ research assistantship. I can quite truthfully say that without the grant I received from FONZ and the help I got from the FONZ staff, I doubt I could have completed my research.

As part of my FONZ research assistantship, I was preparing my



Frank Kohn

*The slow-moving binturong lives primarily on bananas, peaches, oranges, and other fruits (not fingers). Its teeth are "molarized," meaning they grind rather than shear food. Playful babies grow up into solitary adults.*





Boe seems to inspect the fit of author Frank Kohn's shirt as baby Arroe looks on. "Binturongs will always be my favorite zoo animals," Frank says.

master's thesis on olfactory communication—or what information, if any, was conveyed by binturong's scent-markings. Because these animals are both black-coated and nocturnal, I didn't think they would display too many visual communication behaviors.

Before I explain my research further, let me introduce the nine subjects of my study.

Boe was, and still is, my favorite. She, along with her two siblings Bute and Bum, came from the Buffalo Zoo. Each weighed about 60 pounds. Boe was the easiest to work with, and had the endearing habit of leaning from her perch, grabbing a shirt sleeve with her sharp claws, and turning a person around, as if she were a tailor inspecting the fit of the garments.

Boe mothered two litters, only one of which survived. The second litter consisted of one female cub, Arroe, a bundle of ceaseless energy. Arroe would crawl up and down one's body, nibble one's ear, even wrap her tail around one's neck. Such scenes were the source of constant amusement for visitors to her cage. As she got older, though, she got heavier, and the scratches she inadvertently made got longer and deeper.

Less outgoing, Bum and Bute wanted only peace, quiet, and food.

Raven, Abbot, Abe, and Rabbott were all products of the National Zoo's breeding efforts. Rabbott never wanted much to do with people. Raven, his mother, was a genuine fussbudget, and her behavior was always unpredictable.

Conversely, Raven's brothers, Abbott and Abe, were constant. Abe enjoyed playing with the long-

Rebecca Conway

handled squeegees used to clean his cage. If given a chance, he would even climb onto one's back—but since he weighed 40 pounds, this was often a painful game for the person he was climbing on.

Abbot was Abe's opposite. He would have fit in perfectly with the radical culture of the 1960s—he was against everything. Abbott stayed on the floor of his cage, usually in his litter box, and wanted only to be left alone with all the food in the world. At feeding time he would scream and cry until fed, and hand feeding often resulted in hands almost being part of the feed. When there was nothing left to eat, Abbott would often protest by throwing his food pan and water dish around his cage with his tail.

Finally there was Stutz ("binturong" means "bear cat" in Malay!), from Baton Rouge. Although he looked like a baby, weighing only 28 pounds, Stutz was fully mature, and had sired a litter born to Raven as recently as May 1980. Stutz, like Abbott, stayed aloof.

My experiment, which I conducted nightly for six months, consisted of presenting pairs of gauze pads to each animal. These pads had been wiped through the perineal glands of individual binturongs. For instance, Abe might be presented with two pads: one scented with Boe's secretions, and the other with Abbott's. I limited the number of pads presented to two, and always had one pad with a female's scent and one pad with a male's scent.

I was looking for which scent received more investigation in the form of sniffing and licking—thus, which scent may be more attractive. Both

males and females were used as scent receivers (sniffers) and scent donors.

My results indicated that female scent was sniffed for longer periods of time than male scent by both males and females. In addition, the female scent pads were licked more by males than the male pads were.

If the scent pad was taken from a female in heat, the sniffing and licking behavior rose sharply in males. The males also exhibited another form of behavior, called *flehmen*. *Flehmen* is seen frequently in ungulates, such as deer and antelopes. The male animal licks the female's urine, and then raises his head high up while curling his upper

lip. *Flehmen* may involve some chemical processing of the scent within the poorly-understood olfactory system. It is thought that *flehmen* helps the male animal determine the female's readiness for breeding.

Unlike other species, such as the giant and red pandas, which scent-mark to establish territory, the binturong seems to use its scentmarking to communicate sexual information and reproductive state. Further lab and field studies may reveal more specific answers. Meanwhile, it might be a good idea not to wear a perfume fixed with civetone around a male binturong—you could be in for a surprise! □



Frank Kohn  
*Clinging tightly to her mother's dense, shaggy fur, Arroe gets a free ride. Like many arboreal animals, binturong babies are experts at hanging on. They are ready to climb on their own, as at right, at about 10 weeks.*

## Reptiles Revisited

Last spring the National Zoo began renovating its almost 50-year-old Reptile House. Amid hammering, drilling, and other signs of industry, notices say, "The Reptiles and Amphibians Are Off Exhibit."

But where have they all gone? And how are they doing?

They've gone to a quiet, well-ventilated building once used by the Zoo's Office of Facilities Management, and now known simply as "Reptile Holding." Here, the Zoo's snakes, lizards, and other "herps" are kept under closely monitored environmental conditions designed to meet their needs as fully as possible. Many are in the same enclosures zoogoers have always seen them in.

Most are doing very well—the death rate is down, and there have even been some unexpected births. "Being off exhibit actually helps some species," commented keeper Bela Demeter. "They don't get visitors tapping on their glass walls and shouting at them. The rattlesnakes in particular are enjoying the privacy."

Today in Reptile Holding, space constraints mean that there are fewer animals for the keepers to take care of. About a fourth of the collection was given away or loaned to other zoos—or even, in the case of the non-venomous species native to Washington, reintroduced into the wild.

The keepers are far from idle,



Francie Schroeder

*While the Reptile House undergoes renovation, most of its inhabitants, like this panther gecko, are in the same four walls they've always known, though living comfortably "off campus."*

however. They are using the time formerly reserved for dealing with Zoo visitors for projects of their own. Their major project is the writing and printing of various handout sheets that can be sent to people who call the Reptile Division with questions. Some of the titles already published or planned include "Captive Care of Box Turtles," "Captive Care of Snakes," "Egg Incubation," and a condensed version of "Common Mistakes About Snakes" from this issue of *ZooGoer* (p. 4). Other keepers are working on various research projects, including "Dominance and Courtship Behavior of the Streak Lizard (*Gonatodes vittatus*) and the Mauritius Day Gecko (*Phelsuma cepediana*)."

While the animals are resting off exhibit, the Zoo is at work improving their home. Some of the renovations in the Reptile House will not be dramatic. The plumbing systems, heating, and electric wiring will be modernized. The formerly leaking roof has been fixed, and a new, non-asbestos ceiling has been installed.

The really eye-catching changes that have been planned include construction of three new crocodile yards behind the Reptile House and a huge indoor pool for turtles, which will extend from the floor to about shoulder height, so that people will be able to watch the turtles swimming.

The tortoise yard will be moved and linked to the Reptile House, so the tortoises can move directly into the heated building for the winter.

A picture window will allow keepers to go about their duties in full view of the public, and, from behind the glass, answer questions. This special exhibit is intended to be similar to the Zoo's very popular "Mingle With the Monkeys" program.

There will be a nocturnal animals area and an Education Center similar to Zoolab and Birdlab.

"We'll be preserving all the old features of the Reptile House that made it so charming," said Curator of Herpetology Dale Marcellini. "The carvings and mosaics over the doors, the mosaics on the floors, the murals—everything that the Public Works of Art Project generated back in the '30s.

"Some of the changes will be smaller, but still important," he continued. "For example, we want to try to have all-natural materials in the exhibits—no plastic plants or concrete rocks. The exhibits will stay just as spacious as they've always been, of course. Some of our snakes have the largest enclosures for their species in the United States."

The Reptile House will be reopened to the public in early spring, 1981, keepers hope. As plans now stand, the new crocodile yards will feature American alligators, Jacare caimans, dwarf caimans, smooth-fronted caimans, and Cuban crocodiles.

Other residents of the renovated Reptile House may include Indian cobras, poisoned-arrow frogs, and basilisk lizards.

"If everything goes according to plan," says Marcellini, "we're going to have reptile and amphibian facilities that are unique—that is, until other zoos start copying us!" □

## Sunday Afternoons at The National Zoo

Have you ever seen a hippo walk under water? Do you know how a bird flies? Can you take spectacular pictures of zoo animals?

If your answers to the above questions are "No," then you probably did not attend last winter's *Sunday Afternoons at the National Zoo*—a series of fun, free, and unusual Sunday afternoon happenings.

Don't worry! The upcoming season of *Sunday Afternoons at the National Zoo* will be even better.

These popular Sunday programs are sponsored by the Zoo's Office of

Education and FONZ's Office of Volunteer and Educational Services. The themes vary, and some may be aimed more at one age level than at others. In general, though, the programs are for families to enjoy together. The program formats vary as well, with different combinations of films, workshops, tours, or slide shows.

This winter, you can compete in the "Zoo Olympics," to see if you can hop as far as a kangaroo or stand on one leg as long as a flamingo. "Focus Africa" will have a workshop on making an animal mask, as well as films about Africa. "That's Inedible!" will show you how to make animal



NZP Office of Graphics and Exhibits

*Making paper airplanes and cutting out bird mobiles to teach participants about flight are among the games that make learning fun in the Zoo's free upcoming series, Sunday Afternoons at the National Zoo.*

ornaments for your Christmas tree. Other special programs planned will celebrate the opening of the Great Ape House, explain falconry, help you create fantastical animals, put a reptile into your life, and much more.

The National Zoo is usually crowded with visitors in the summer and empty in the winter. *Sunday Afternoons at the National Zoo* is an ideal way for you and your family to enjoy the Zoo together at a time when many of the animals are more active—and when it will be easy to beat the heat! □

## Give a Tree to the Zoo



Bamboo is not the only plant you can donate to the National Zoo! The keepers in Beaver Valley need saplings—young trees of almost any species to feed to the toothy stars of the Valley. ("Maple and poplar are the beavers' favorites," one keeper notes.)

If you would like to donate saplings to the Zoo, please call keeper Lisa Stevens at 673-4859 or 673-4783. The Zoo may go out to pick up the trees, depending on the location and how many are available.

Give a tree to the National Zoo—the bark will be as good as the bite! □

# FONZ NEWS

---

## FONZ Contracts Renewed

It began in 1958, when a few dedicated people banded together to help the National Zoo.

But for its first few years, FONZ was only a small membership organization, giving support to the Zoo where it could in an early volunteer guide program.

Then in 1967, FONZ signed its first contract with the National Zoo, to manage the Zoo's souvenir/gift offerings, and opened its first tiny kiosk. (That kiosk, still at the Zoo today, is presently the Panda Ice Cream stand.)

In 1973 FONZ began managing the Zoo's parking operation. Then in 1975, FONZ took over the Zoo's food service. In each case, contracts were signed with the Smithsonian Institution spelling out each side's respective responsibilities and goals.

In spring 1980 it came time for the FONZ contracts to be renegotiated. All three contracts—food, gifts, and parking—needed to be revised and updated in terms of the Smithsonian's and the Zoo's changing needs.

The FONZ Board of Directors appointed a Contract Renegotiation Committee which included Board members Stephen Hosmer, Anthony Gould, and Victor Delano, as well as Treasurer Robert Nelson and President Whayne Quin.

The FONZ committee had a number of meetings with Zoo and

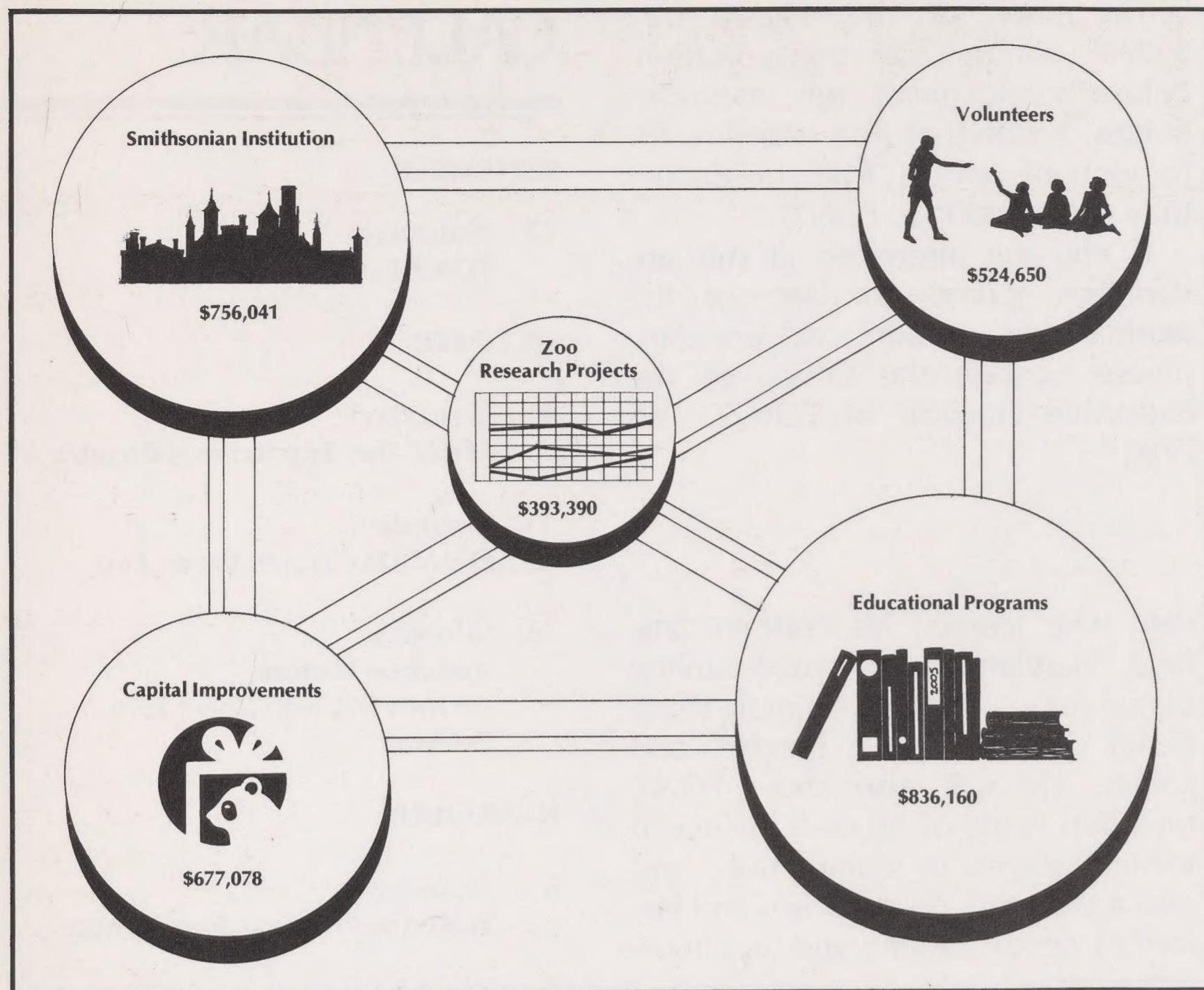
Smithsonian representatives to discuss the length of time each contract should run, fees, and other operational concerns. The committee devoted many hours of hard work to preparing for and conducting the negotiations, which were complex—particularly since no one has a crystal ball capable of seeing the effects inflation will have over the next few years.

The results of the negotiations can be interpreted as a vote of confidence in FONZ by the Zoo and the Smithsonian. The food service and merchandising contracts each run ten years, and the parking contract runs two years and at the end of that time is renewable. Other contract terms are similarly favorable.

FONZ's support for the Zoo has grown significantly since its first contract was signed. The 1975 food service contract heralded dramatic changes in the Zoo's concessions operations. Within a year, FONZ had transformed the previously dilapidated Zoo restaurant into an air-conditioned, plant-filled cafeteria with silk-screened wallpaper that gave it the look of a jungle.

The new Panda Gardens, named in honor of the Zoo's best-known residents, gave diners a panoramic view of the outdoor yards of the pandas, elephants, and giraffes.

Since 1975, FONZ has added more food facilities, like the Ice Cream Scoop, a Pop Stop, four ice cream/snack kiosks, and a Wine and Cheese



Between 1974 and 1979, FONZ supported the National Zoo in hundreds of ways, including funding research projects, educational programs, capital improvements, and the all-important volunteers—for a total value of \$13,191,319.

Kiosk. More and better facilities are planned for upcoming years.

Souvenir shopping was similarly upgraded and expanded. The Mane Gift Shop, built in 1971, was joined in 1975 by the Panda Gift Shop and in 1977 by the Bookstore/Gallery, one of the finest specialty shops in Washington.

Parking was initially operated on a "pay-as-you-go-in" basis. But after two years, efficiency was increased by changing the operation so that visitors paid on the way out, and FONZ opened two information booths to be sure that their questions were answered.

The expansion of visitor services has meant a great deal to the Zoo in support of its programs in research, education, and conservation. In the '50s and '60s, FONZ gave the Zoo the time and efforts of its staff and volunteers. With the addition of more concessions, FONZ income—and Zoo support—increased dramatically.

With the money the concessions have earned, FONZ has been able to sponsor such programs as Zoo summer internships, Zoo research fellowships, and the FONZ "summer camp" for inner city youngsters, to name but a few.

The FONZ grant program in support of Zoo education and research has more than quadrupled in the last few years, from \$30,000 in 1975 to \$138,000 in 1979. The physical facilities maintained by FONZ have improved, and FONZ volunteers donated an extraordinary 41,000 hours in 1979 alone.

Some of the Zoo programs FONZ supports include NZP symposia and the publication of their results; a keeper exchange program; field conservation studies in such faraway places as Nepal and Indonesia; a Visiting Lecturer fund; scientific studies of Père David's deer, Indian rhinos, gibbons, South American bush dogs, elephant shrews, giant pandas, genetic breeding, and mother-infant interactions among deer and antelope; and *Sunday Afternoons at the National Zoo*.

In the 1980s, FONZ expects to play an ever greater role in supporting the Zoo's work in research, education, and conservation. The new contracts continuing FONZ's visitor services make this possible. □

## Amazon Adventure

The legendary Amazon River, with its jungle wildlife, primitive peoples, and exotic plants, is the destination of a new FONZ tour scheduled for April 1981.

The 11-day safari, April 15-26, will include a four-day cruise up the Amazon aboard an air-conditioned ship, jungle treks to Indian villages and a monkey island, and canoe excursions to explore remote tributaries.

Close-up looks at huge anaconda snakes, rare tropical birds, and re-

markable transparent frogs are promised on a special tour of an animal collecting station.

The Amazon adventure ends in Lima, the capital of Peru since its colonial days. There will be visits to the remarkable Gold Museum and Indian markets, plus a farewell banquet at the elegant and famed "Tambo de Oro."

Post-tour visits to nearby Machu Picchu will also be offered.

## A Bird in the Hand

On September 26, 1980, FONZ members are invited to the Bookstore/Gallery for a special evening in honor of one of the few native American crafts, the carving of wooden duck decoys.

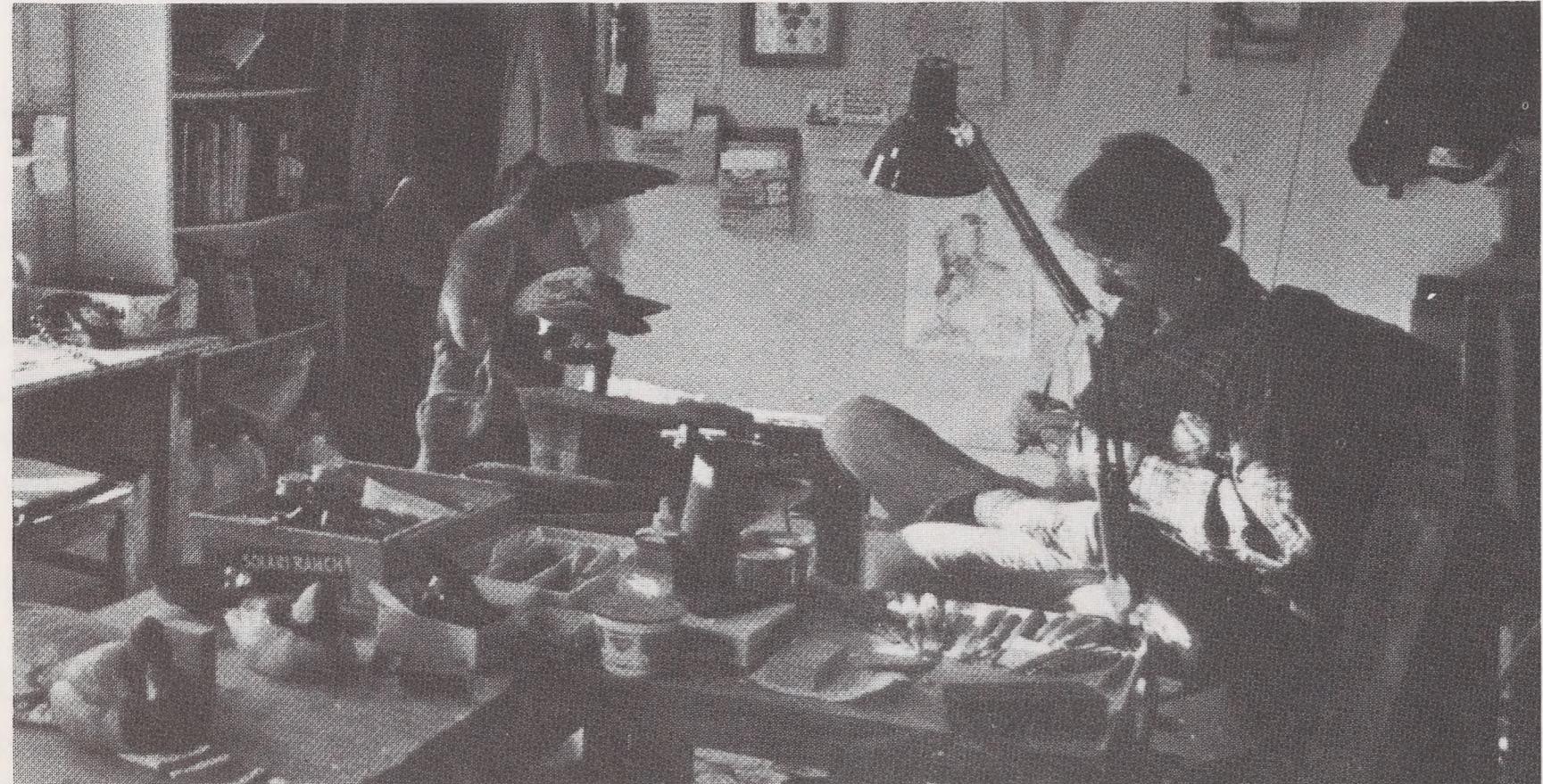
The Bookstore/Gallery is opening its newest exhibit and sale with this evening of antique, working, and decorative duck decoys. The opening, which begins at 7:00 p.m., will feature a wood carver from Maryland's Eastern Shore. Mr. Don Brid-

The price of the 11-day trip, \$1,847, includes all transportation, deluxe hotels, meals, tips, naturalist guides, a FONZ or Zoo tour director throughout, and a \$100 tax-deductible contribution to FONZ.

If you are interested in this uncommon journey to one of the world's last wildlife wildernesses, please contact the Office of the Executive Director of FONZ, 232-7700. □

dell, who learned his craft in Crisfield, Maryland, a renowned carving community, will carve a simple traditional decoy using a hatchet and knives. He will also show FONZ members some of his own decoys in various stages of completion, and give a short talk on the origin and history of decoy carving and its importance today.

Books will also be available on this fascinating art and craft, and refreshments will be served. □



Moo Bridgell

Eastern shore artist Don Bridgell has been carving duck decoys for most of his life. FONZ members can see him at work and talk to him at a reception on September 26.

## CALENDAR

### SEPTEMBER

27 (Saturday)  
**FONZ Fall Classes Begin.**

### OCTOBER

4 (Saturday)  
**FONZ Day Trip to Front Royal, VA**

11 (Saturday)  
**FONZ Day Trip to Bronx Zoo**

18 (Monday)  
**Audubon Lecture**  
*"In the Field with Roger Tory Peterson"*

### NOVEMBER

8 (Saturday)  
**Waterfowl Festival, Easton, MD**

16 (Sunday)  
**Sunday Afternoon at the National Zoo**  
*"Zoo Olympics"*

17 (Monday)  
**Audubon Lecture**  
*"The Crested Ibis of Japan—Efforts to Save the World's Most Endangered Bird"*

23 (Sunday)  
**Sunday Afternoon at the National Zoo**  
*"Focus Africa"*

The "Sunday Afternoon at the National Zoo" program is free to the public.

For more information, call FONZ at 232-7700.

# CONTRIBUTORS

---

---

## **Common Mistakes About Snakes:**

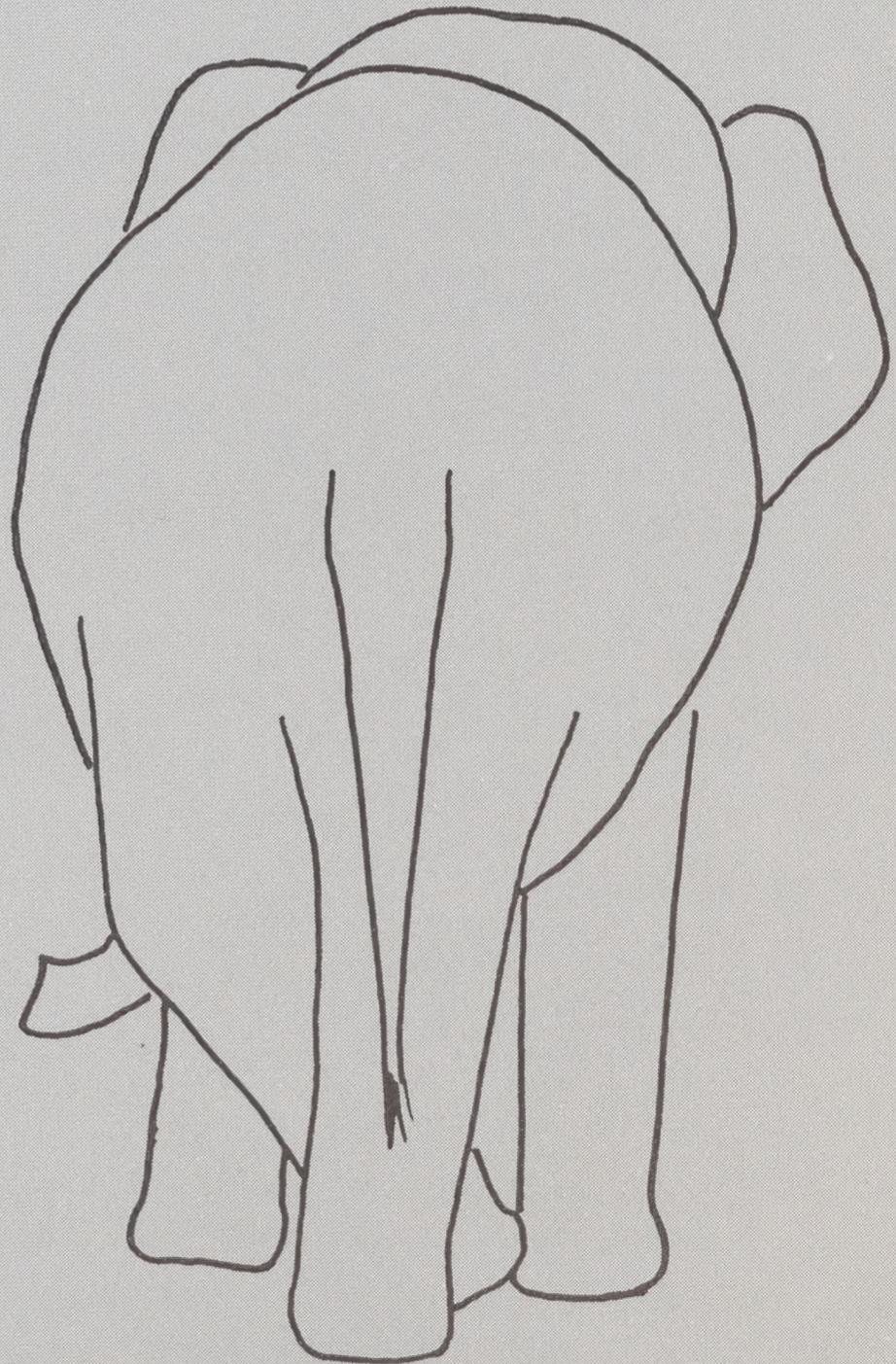
BELA DEMETER is a keeper in the Reptile Division. He has been with the Zoo for seven years, and is a frequent contributor to *ZooGoer*.

## **The Illegal Wildlife Trade:**

DAVID MACK is Assistant Director of Traffic (U.S.A.), a scientific information-gathering program funded by World Wildlife Fund-U.S. "I've been a fan of FONZ ever since I came to Washington," he writes.

## **Binturong on My Back:**

FRANK KOHN, who recently received his Master's degree in animal behavior, is currently a keeper at the Audubon Park Zoo in New Orleans.





Mary W. Matthews

**Friends  
of the  
National**



at the National Zoological Park  
Washington, D.C. 20008

Address correction requested

Non-Profit Org.  
U.S. Postage  
**PAID**  
Washington, D.C.  
Permit No. 44282